

WHAT IS CLAIMED IS:

1. A drilling fluid comprising:
5 (a) an aqueous liquid;
 (b) one or more viscosity agents; and
 (c) one or more surfactants having HLB numbers equal to or greater than approximately 7.
- 10 2. The drilling fluid of Claim 1, further comprising emulsified bituminous material.
3. The drilling fluid of Claim 1, wherein the emulsified bituminous material derives from cuttings produced in the process of drilling through oil sand.
- 15 4. The drilling fluid of Claim 2, wherein the concentration of emulsified oil or bitumen is in the range from 0.1 to 250 kilograms per cubic meter of drilling fluid.
5. The drilling fluid of Claim 1, wherein the aqueous liquid comprises water.
- 20 6. The drilling fluid of Claim 1, wherein the one or more viscosity agents are selected from the group consisting of polyanionic cellulose, xanthan gum, clay, and starch.
7. The drilling fluid of Claim 6, wherein the clay is bentonite.
- 25 8. The drilling fluid of Claim 1, wherein the concentration of the one or more viscosity agents is within the range from 0.1 to 40 kilograms per cubic meter of drilling fluid.

9. The drilling fluid of Claim 1, wherein the one or more surfactants having HLB numbers equal to or greater than approximately 7 are selected from the group consisting of carboxylate salts, sulfonides, sulphates, phosphates, polyethoxylate ether, alkylphenol ethoxylates, alcohol ethoxylates, fatty acid ethoxylates, ethoxylated alkanolamide, alkyl ether phosphate, alkyl benzene sulfonates, ethoxylated fatty acids, castor oil ethoxylates, glycerol esters, ethylene oxide propylene oxide-block copolymers, nonylphenoxypoly (ethyleneoxy) ethanol, imidazolines, betaines, propionates, and amphotoacetates.

10. The drilling fluid of Claim 1, wherein the one or more surfactants having HLB numbers equal to or greater than approximately 7 include an anionic surfactant.

11. The drilling fluid of Claim 1, wherein the one or more surfactants having HLB numbers greater than 7 include a nonionic surfactant.

12. The drilling fluid of Claim 1, wherein the total concentration of the one or more surfactants having HLB numbers equal to or greater than approximately 7 is in the range from 0.5 to 25 kilograms per cubic meter of drilling fluid.

13. The drilling fluid of Claim 1, further comprising one or more polymer materials.

14. The drilling fluid of Claim 13, wherein the one or more polymer materials are selected from the group consisting of xanthan gum, polyanionic cellulose, modified starch, and non-modified starch.

15. The drilling fluid of Claim 13, wherein the concentration of polymer materials is in the range from 0.1 to 25 kilograms per cubic meter of drilling fluid.

16. The drilling fluid of Claim 1, further comprising one or more alkaline materials.

17. The drilling fluid of Claim 16, wherein the one or more alkaline materials are selected from the group consisting of sodium hydroxide and sodium carbonate.

18. The drilling fluid of Claim 16, wherein the total concentration of the one or more alkaline materials is in the range from 0.5 to 5 kilograms per cubic meter of drilling fluid.

19. The drilling fluid of Claim 1, further comprising a carrier oil.

20. The drilling fluid of Claim 19, wherein the concentration of the carrier oil is in the range from 0.1 to 75 kilograms per cubic meter of drilling fluid.

21. The drilling fluid of Claim 1, further comprising one or more weighting materials.

22. The drilling fluid of Claim 21, wherein the one or more weighting materials are selected from the group consisting of barite, hematite, and calcium carbonate.

23. The drilling fluid of Claim 21, wherein the concentration of the one or more weighting materials is in the range from 0.1 to 300 kilograms per cubic meter of drilling fluid.

24. The drilling fluid of Claim 1, further comprising one or more defoaming agents.

25. The drilling fluid of Claim 24, wherein the one or more defoaming agents are selected from the group consisting of alcohol-based and silicone-based defoamers.

26. The drilling fluid of Claim 24, wherein the total concentration of defoaming agents is in the range from 0.1 to 15 kilograms per cubic meter of drilling fluid.

27. A process for making an emulsified drilling fluid containing emulsified oil or bitumen from oil sand cuttings, said process comprising the steps of:

- (a) providing a primary drilling fluid comprising an aqueous liquid, a viscosity agent, and one or more surfactants having HLB numbers equal to or greater than approximately 7; and
- (b) mixing the primary drilling fluid with cuttings produced by drilling through oil sand formations containing oil or bitumen;

wherein said surfactants are effective to emulsify the oil or bitumen from the cuttings, and the emulsified oil or bitumen becomes substantially uniformly dispersed within the primary drilling fluid, thereby forming the emulsified drilling fluid.

28. The process of Claim 27, wherein the step of mixing the primary drilling fluid with cuttings is accomplished by circulating the primary drilling fluid through the annular space of the wellbore of a well being drilled through an oil sand formation, such that cuttings from the oil sand formation become mixed into the primary drilling fluid.

29. The process of Claim 27, wherein the primary drilling fluid includes one or more polymers.

30. The process of Claim 27, wherein the primary drilling fluid includes one or more alkaline materials.

31. The process of Claim 27, wherein the primary drilling fluid includes a carrier oil.

32. The process of Claim 27, wherein the primary drilling fluid includes one or more weighting materials.

33. The process of Claim 27, wherein the primary drilling fluid includes one or more defoaming agents.

34. A drilling fluid comprising: ✓
- (a) an aqueous liquid;
 - (b) one or more viscosity agents; and
 - (c) a carrier oil having solvent properties.

5

35. The drilling fluid of Claim 34, wherein the aqueous liquid comprises water.

36. The drilling fluid of Claim 34, wherein the one or more viscosity agents include a clay.

10 37. The drilling fluid of Claim 36, wherein the clay is bentonite.

38. The drilling fluid of Claim 34, wherein the concentration of the one or more viscosity agents is in the range from 10 to 40 kilograms per cubic meter of drilling fluid.

15 39. The drilling fluid of Claim 34, wherein the concentration of carrier oil is in the range from 1.0 to 75 kilograms per cubic meter of drilling fluid.

20